

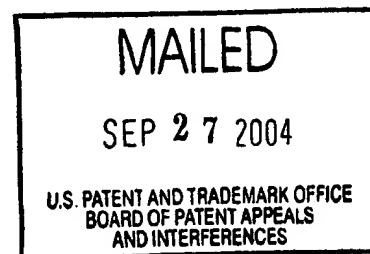
UNITED STATES PATENT AND TRADEMARK OFFICE

**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Ex parte RETO SCHOB

Appeal No. 2004-1916
Application No. 09/127,644

ON BRIEF



Before HAIRSTON, BARRY, and LEVY, *Administrative Patent Judges*.

BARRY, *Administrative Patent Judge*.

DECISION ON APPEAL

A patent examiner rejected claims 1, 3-8, 10, 14, and 17-21. The appellant appeals therefrom under 35 U.S.C. § 134(a). We affirm.

BACKGROUND

The invention at issue on appeal is a magnetically "journalled" rotational arrangement. (Spec.¹, Field of the Invention.²) Magnetically journalled rotational

¹We rely on and refer to the substitute specification, (Paper No. 8), in lieu of the original specification, which was not considered in deciding this appeal.

²The appellant should number the pages of his specifications to facilitate citation thereto.

arrangements are used in applications where mechanically journalled rotational arrangements are disadvantageous. For example, magnetically journalled rotational arrangements are useful in clean rooms where gases escaping from the lubricants of mechanical bearings cannot be tolerated. (*Id.*, Description of the Prior Art.)

According to the appellant, a European patent application published as "EP-A-0,130,541" describes a magnetically journalled rotational arrangement with a flywheel. (*Id.*) The rotor and the stator of the arrangement both include ring-shaped magnets for the magnetic "journaling" of the rotor. (*Id.*) The stator also comprises control windings for correcting deflections of the rotor from its desired position. Separate drive means for driving the rotor are also in the rotor and the stator. The appellant opines that this arrangement, however, "is relatively complicated and expensive." (*Id.*)

In contrast, the appellant's magnetically journalled rotational arrangement features a disk- or ring-shaped rotor and a stator. The stator includes magnets that generate a field to rotate the rotor. The rotor includes magnets that generate a unipolar biased, magnetic flux that is spatially modulated when viewed in the circumferential direction. (*Id.*, *abs.*) According to the appellant, such an arrangement is "generally uncomplicated and inexpensive." (Appeal Br. at 2.)

A further understanding of the invention can be achieved by reading the following claim.

1. A magnetically journalled rotational arrangement comprising a substantially disc-shaped or ring-shaped magnetically journalled rotor and a stator which comprises means for the production of a field which produces a rotation of the rotor, wherein the rotor has means which generate a unipolar bias magnetic flux which is spatially modulated when viewed in the circumferential direction, wherein the means which generate a unipolar bias magnetic flux comprise permanent magnets which are distributedly [sic] arranged on the substantially disc-shaped or ring-shaped rotor.

Claims 1, 4, 8, 10, and 14 stand rejected under 35 U.S.C. § 103(a) as obvious over International Patent Application No. WO 97/15978 ("Nichols") and U.S. Patent No. 4,043,614 ("Lyman"). Claims 17-19 stand rejected under § 103(a) as obvious over Nichols; Lyman; and German Patent No. 945,183 ("Kaspar"). Claims 20 and 21 stand rejected under § 103(a) as obvious over Nichols, Lyman, and International Patent Application No. WO 96/31934 ("Schoeb").

Claims 1, 3, 4, 5, 8, 10, and 14 stand rejected under § 103(a) as obvious over European Patent Application No. 130,541 ("Shimamoto") and U.S. Patent No. 4,668,885 ("Scheller"). Claims 6 and 7 stand rejected under § 103(a) as obvious

over Shimamoto; Scheller; and Japanese Patent Application No. 59-113,316 ("Machino").

OPINION

"[T]o assure separate review by the Board of individual claims within each group of claims subject to a common ground of rejection, an appellant's brief to the Board must contain a clear statement for each rejection: (a) asserting that the patentability of claims within the group of claims subject to this rejection do not stand or fall together, and (b) identifying which individual claim or claims within the group are separately patentable and the reasons why the examiner's rejection should not be sustained." *In re McDaniel*, 293 F.3d 1379, 1383, 63 USPQ2d 1462, 1465 (Fed. Cir. 2002) (citing 37 C.F.R. §1.192(c)(7) (2001)). "If the brief fails to meet either requirement, the Board is free to select a single claim from each group of claims subject to a common ground of rejection as representative of all claims in that group and to decide the appeal of that rejection based solely on the selected representative claim." *Id.*, 63 USPQ2d at 1465.

Here, the appellant stipulates that "for purposes of this appeal, the claims may stand or fall on independent claim 1." (Appeal Br at 3.) We select claim 1 as representative of the claims. With this representation in mind, rather than reiterate the

positions of the examiner or the appellant *in toto*, our opinion addresses the rejections in the following order:

- rejections relying on Nichols and Lyman
- rejections relying on Shimamoto and Scheller.

A. REJECTIONS RELYING ON NICHOLS AND LYMAN

Rather than reiterate the positions of the examiner or the appellant *in toto*, we focus on the two points of contention therebetween. First, the examiner finds, "Nichols teaches every aspect of the invention, except permanent magnets on the rotor creating unipolar magnetic bearing flux. . . ." (Examiner's Answer at 5.³) Further finding that "Lyman teaches an axially oriented permanent magnet 31 on the rotor to provide magnetic bearing flux across the air gap with the stator," (*id.*), the examiner asserts, "[i]t would have been obvious to a person skilled in the art at the time of the invention to construct the motor of Nichols with the permanent magnet on the rotor as in Lyman to efficiently support a rotor with a large moment of inertia." (*Id.*) The appellant argues that "Lyman's indication that inhomogeneity [sic] of the biased magnetic flux in the

³We rely on and refer to the substitute examiner's answer, (Paper No. 25), in lieu of the original examiner's answer, (Paper No. 22), because the latter was defective. (Paper No. 24.) The original examiner's answer was not considered in deciding this appeal.

rotor should be minimized," (Appeal Br. at 6), would have "lead away from claimed invention. . . ." (*Id.*)

"In rejecting claims under 35 U.S.C. Section 103, the examiner bears the initial burden of presenting a *prima facie* case of obviousness." *In re Rijckaert*, 9 F.3d 1531, 1532, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993) (citing *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992)). "A *prima facie* case of obviousness is established when the teachings from the prior art itself would itself appear to have suggested the claimed subject matter to a person of ordinary skill in the art." *In re Bell*, 991 F.2d 781, 783, 26 USPQ2d 1529, 1531 (Fed. Cir. 1993) (quoting *In re Rinehart*, 531 F.2d 1048, 1051, 189 USPQ 143, 147 (CCPA 1976)). Furthermore, "[t]he presence or absence of a motivation to combine references in an obviousness determination is a pure question of fact." *In re Gartside*, 203 F.3d 1305, 1316, 53 USPQ2d 1769, 1776 (Fed. Cir. 2000) (citing *In re Dembiczak*, 175 F.3d 994, 1000, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999)). "[T]he question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination." *In re Beattie*, 974 F.2d 1309, 1311-12, 24 USPQ2d 1040, 1042 (Fed. Cir. 1992) (quoting *Lindemann Maschinenfabrik GMBH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 1462, 221 USPQ 481, 488 (Fed. Cir. 1984)). "[E]vidence

of a suggestion, teaching, or motivation to combine may flow from the prior art references themselves, the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved. . . ." *Dembiczak*, 175 F.3d at 999, 50 USPQ2d at 1617 (citing *Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1630 (Fed. Cir. 1996); *Para-Ordnance Mfg. v. SGS Imports Int'l, Inc.*, 73 F.3d 1085, 1088, 37 USPQ2d 1237, 1240 (Fed. Cir. 1995)).

Here, Nichols discloses "an integrated magnetic motoring and suspension system (IMMSS) 10," p. 8, which "features a stator assembly 16 that surrounds a rotor 18 with a radial spacing, a thin annular air gap 20." *Id.* "The stator assembly 16 has a pair of vertically spaced pole pieces 36, 36 in the form of generally flat plates that sandwich a permanent magnet 38, which, as shown, is preferably four identical, equiangularly-spaced permanent magnets 38a, each associated with, and angularly centered on, a pole segment 36a. The four magnets 38a are mounted generally at the outer periphery of the plates 36, 36." P. 10. A "DC magnetic flux of the permanent magnet 38, by magnetizing the rotor and its pole teeth, also induces a rotor flux field. The rotor field interacts with a rotating electromagnetic field to develop a torque about the z-axis, and thereby drive the rotor." P. 12. Although the embodiments described in the primary reference do not specifically mention permanent magnets on the rotor,

Nichols emphasizes that "various alterations and modifications [thereto] will occur to those skilled in the art." P. 17.

The appellant admits that "Lyman teaches using permanent magnets on the rotor. . . ." (Appeal Br. at 6.) He does not contest, moreover, the examiner's assertion that "construct[ing] the motor of Nichols with the permanent magnet on the rotor as in Lyman [would have] efficiently support[ed] a rotor with a large moment of inertia." (Examiner's Answer at 5.) "The appellant's '[s]ilence implies assent.'" *Ex parte Knapton*, 67 USPQ2d 1059, 1060 (Bd.Pat.App. & Int. 2002) (quoting *Harper & Row Publishers, Inc. v. Nation Enters.*, 471 U.S. 539, 572, 225 USPQ 1073, 1085 (1985)).

Furthermore, we find that the secondary reference "afford[s] [other] advantages. . . ." Col. 1, l. 17. Lyman describes these advantages as follows.

A plurality of like bearing elements may be constructed for inclusion in one end product for stable reference purposes or other purposes having stringent requirements as to the bearings. Furthermore, high bearing efficiency and control of alignment are to be provided without excessive mass of the suspension means.

An object of this invention is to provide an improved magnetic suspension system providing great restoring force in response to the axial component of relative displacement between a stator portion and a rotor portion, providing great restoring force in response to any relative cocking (i.e. departure from parallelism) between a stator portion and a rotor portion, and providing efficient and effective control of the force components perpendicular to the axis of the stator portion to provide the

optimum positioning of the rotor axis relative to the stator axis to meet the various conditions which may be encountered.

Id. at ll. 19-37. Because Nichols invites alterations and modifications to its IMMSS; the appellant assents to the examiner's assertion that constructing the motor of Nichols with the permanent magnet on the rotor as in Lyman would have efficiently supported a rotor with a large moment of inertia; and the secondary reference offers other advantages, we find that the examiner has established a *prima facie* motivation to combine teachings from the references

"After a *prima facie* case of obviousness has been established, the burden of going forward shifts to the applicant." *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984). "[P]rior art references . . . must be read as a whole and consideration must be given where the references diverge and teach away from the claimed invention." *Akzo N.V. v. U.S. Int'l Trade Comm'n*, 808 F.2d 1471, 1481, 1 USPQ2d 1241, 1246 (Fed. Cir. 1986) (citing *W.L. Gore & Assocs. v. Garlock*, 721 F.2d 1540, 1550, 220 USPQ 303, 311 (Fed. Cir. 1983)).

Here, as noted by the appellant, (Appeal Br. at 6), "[a] further object of [Lyman's] invention is to provide an improved magnetic suspension system which provides the aforementioned benefits without **excessive** drag from eddy currents induced in the

rotor." Col. 1, ll. 38-41 (emphasis added). In other words, the secondary reference seeks to be "**relatively free from major** eddy current drag. . . ." Col. 6, l. 31 (emphases added). "[T]o minimize resulting eddy currents induced in the rotor," col. 3, 41-42, Lyman explains that "the gap in the periphery of the pole disc should be very narrow," *id.* at ll. 37-38, and "the stator and rotor are coaxial and are substantially free from any persisting contribution from the electromagnet control circuit." Col. 6, ll. 38-40. In summary, the secondary reference seeks to minimize, but not eliminate, eddy currents in its rotor. Furthermore, such eddy currents can be minimized by narrowing the gap in the periphery of the pole disc, aligning its stator and rotor along the same axis, and reducing contributions from its electromagnet control circuit.

In summary, adding permanent magnets to Nichols' rotor would have efficiently supported a rotor with a large moment of inertia. The coaxial alignment of the primary reference's stator assembly and rotor, i.e., the "stator assembly 16 . . . surround[ing] a rotor 18 with a radial spacing," p. 8, and the "thin annular air gap 20," therebetween, *id.*, would have helped to minimize resulting eddy currents induced in the rotor. The eddy currents could have been further minimized by reducing contributions from its "control coils 42. . . ." P. 12. Because Nichols invites alterations and modifications to its IMMSS; adding permanent magnets to Nichols' rotor would have offered advantages;

and eddy currents could be minimized to an acceptable level, we find that combining teachings from the references would have been desirable.

Second, based on the premise that "the claimed invention discloses generating *inhomogeneous* unipolar bias magnetic flux on the rotor by means of permanent magnets on the rotor such that the bias magnetic flux is inhomogeneous at the axially upper and lower part of the rotor and homogeneous in the middle section where the ring 10 is located," (Appeal Br. at 7), the appellant argues, "[n]either of the cited references teaches or even mentions generating inhomogeneous magnetic flux on the rotor by means of the permanent magnets." (*Id.*)

"[T]he main purpose of the examination, to which every application is subjected, is to try to make sure that what each claim defines is patentable. *[T]he name of the game is the claim. . . .*" *In re Hiniker Co.*, 150 F.3d 1362, 1369, 47 USPQ2d 1523, 1529 (Fed. Cir. 1998) (quoting Giles S. Rich, *The Extent of the Protection and Interpretation of Claims --American Perspectives*, 21 Int'l Rev. Indus. Prop. & Copyright L. 497, 499, 501 (1990)). In answering the question, "limitations are not to be read into the claims from the specification." *In re Van Geuns*, 988 F.2d 1181,

1184, 26 USPQ2d 1057, 1059 (Fed. Cir. 1993) (citing *In re Zletz*, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989)).

Here, contrary to the appellant's argument, claim 1 does not specify a magnetic flux that is "inhomogeneous." Because the argument is based on a faulty premise, it is not persuasive. Therefore, we affirm the obviousness rejection of claim 1 over Nichols and Lyman, and the obviousness rejections of claims 4, 8, 10, 14, and 17-21, which rely on Nichols and Lyman, as falling therewith.

B. REJECTIONS RELYING ON SHIMAMOTO AND SCHELLER

We focus on the two points of contention between the examiner and the appellant. First, the examiner finds, "Scheller teach[es] the magnet can be either spatially modulated (separated) or homogenous [sic] (closely spaced)." (Examiner's Answer at 10.) The appellant makes the following argument.

Even if the magnetic field is to some extent spatially modulated between the magnets, due to the structure of the system, this effect, as in Lyman, is adverse to the objective of the invention, and is not taught as a feature of the invention. As was shown before, Sheller [sic] discloses a flywheel that requires a homogeneous magnetic flux to function as disclosed. Therefore it is respectfully submitted that one skilled in the art would not be motivated to combine the teachings of Shimamoto and Scheller for accomplishing an inhomogeneous magnetic flux on the rotor by means of permanent magnets on the rotor.

(Appeal Br. at 8.)

The question of obviousness is "based on underlying factual determinations including . . . what th[e] prior art teaches explicitly and inherently. . . ." *In re Zurko*, 258 F.3d 1379, 1386, 59 USPQ2d 1693, 1697 (Fed. Cir. 2001) (citing *Graham v. John Deere Co.*, 383 U.S. 1, 17-18, 148 USPQ 459, 467 (1966); *In re Dembiczak*, 175 F.3d 994, 998, 50 USPQ 1614, 1616 (Fed. Cir. 1999); *In re Napier*, 55 F.3d 610, 613, 34 USPQ2d 1782, 1784 (Fed. Cir. 1995)). Here, Scheller recognizes the equivalence of magnets that are "spatially modulated (separated) or homogenous [sic] (closely spaced)." (Examiner's Answer at 10.) Specifically, the primary reference discloses a rotor "compris[ing] smaller elongated permanent bar magnets 10 with their longitudinal dimension running vertically. The magnets 10 may be closely spaced or may be somewhat separated." Col. 3, ll. 56-60. Such recognition establishes a *prima facie* case of obviousness.

"Argument in the brief does not take the place of evidence in the record." *In re Schulze*, 346 F.2d 600, 602, 145 USPQ 716, 718 (CCPA 1965) (citing *In re Cole*, 326 F.2d 769, 773, 140 USPQ 230, 233 (CCPA 1964)). Because the appellant's argument that a spatially modulated magnetic field "is adverse to the objective of [Shimamoto's]


invention," (Appeal Br. at 6), is unsupported by evidence in the record, it cannot rebut the examiner's *prima facie* case of obviousness.


Second, the appellant argues, "even if the teachings of Shimamoto and Scheller were combined, there is no disclosure at all in either reference to generate an inhomogeneous unipolar bias magnetic flux." (Appeal Br. at 8.) As we explained regarding the rejections based on Nichols and Lyman, contrary to the appellant's argument, claim 1 does not specify a magnetic flux that is "inhomogeneous." Because the argument is based on a faulty premise, it is not persuasive. Therefore, we affirm the obviousness rejection of claim 1 over Shimamoto and Scheller and the obviousness rejections of claims 1, 3, 4-8, 10, and 14, which rely on Shimamoto and Scheller, as falling therewith.


CONCLUSION

In summary, the rejections of claims under § 103(a) is 1, 3-8, 10, 14, and 17-21 are affirmed. "Any arguments or authorities not included in the brief will be refused consideration by the Board of Patent Appeals and Interferences. . . ." 37 C.F.R. § 1.192(a). Accordingly, our affirmance is based only on the arguments made in the brief. Any arguments or authorities not included therein are neither before us nor at

issue but are considered waived. No time for taking any action connected with this appeal may be extended under 37 C.F.R. § 1.136(a).


KENNETH W. HAIRSTON
Administrative Patent Judge


LANCE LEONARD BARRY
Administrative Patent Judge


STUART S. LEVY
Administrative Patent Judge

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J. GEORG SEKA
TOWNSEND AND TOWNSEND CREW
EIGHTH FLOOR
TWO EMBARCADERO CENTER
SAN FRANCISCO, CA 941113834